

# **LIFS 3160 Ecology (3-credit)**

**Fall 2017-18**

**Tuesday and Thursday, 12:00 – 13:20; Room 2502 (L25/26)**

## **Instructors**

Dr. Ice KO (Course Coordinator)

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## **Course Description**

- Pre-requisite: nil
- Exclusion: nil
- Brief description: this course is designed to equip students with basic understanding in ecology, which includes the organism-environment interaction, characteristics of population as a basic biological unit in an ecosystem, intra- and inter-specific interactions, as well as human impacts on biodiversity and ecosystems.

## **Intended Learning Outcomes**

On successful completion of this course, students are expected to be able to:

1. Examine the different levels of organization in the biosphere (i.e. individual, population, community and ecosystem).
2. Assess the interactions between individuals of the same species, between different species of organisms, and between living things and the physical environment.
3. Identify major environmental problems and the scientific tools for evaluating and addressing the problems.
4. Critically evaluate scientific literature so as to (i) identify the objectives of the study, (ii) appreciate the importance of the scientific questions addressed, (iii) understand the principle, advantages and limitations of the experimental design and data analysis methods, (iv) evaluate the soundness of the conclusion drawn.

## **Assessment Scheme**

- Mid-term Exam: 45%
- Final Exam: 55%

## **Major Reference**

Stiling, P. (2015) *Ecology: Global Insights & Investigations*, Second edition, McGraw-Hill.

**Tentative Course Schedule:**

|            | <b>Date</b>         | <b>Topic</b>   | <b>Instructor</b>   |
|------------|---------------------|--|---------------------|
| 1)         | 5 Sept (Tue)        | Course Introduction (Ko)<br>Scientific Methods, Statistics for Ecologists,<br>Biodiversity Revisited (Yau) | Ko & Yau            |
| 2)         | 7 Sept (Thu)        | Competition and Coexistence (1)  | Ko                  |
| 3)         | 12 Sept (Tue)       | Competition and Coexistence (2)  |                     |
| 4)         | 14 Sept (Thu)       | Facilitation (1)   |                     |
| 5)         | 19 Sept (Tue)       | Facilitation (2)   |                     |
| 6)         | 21 Sept (Thu)       | Predation (1)  |                     |
| 7)         | 26 Sept (Tue)       | Predation (2)  |                     |
| 8)         | 28 Sept (Thu)       | Herbivory (1)  |                     |
| 9)         | 3 Oct (Tue)         | Herbivory (2)  |                     |
|            | 5 Oct (Thu)         | <i>Public Holiday</i>  |                     |
| 10)        | 10 Oct (Tue)        | Parasitism (1)   |                     |
| 11)        | 12 Oct (Thu)        | Parasitism (2)   |                     |
| <b>12)</b> | <b>17 Oct (Tue)</b> | <b>Mid-term Exam</b>   | <b>Ko &amp; Yau</b> |
| 13)        | 19 Oct (Thu)        | Population Regulation (1)  | Ko                  |
| 14)        | 24 Oct (Tue)        | Population Regulation (2)  |                     |
| 15)        | 26 Oct (Thu)        | Genetics and Evolution   | Yau                 |
| 16)        | 31 Oct (Tue)        | Natural Selection, Speciation  |                     |
| 17)        | 2 Nov (Thu)         | Physiological Ecology for Plants   |                     |
| 18)        | 7 Nov (Tue)         | Physiological Ecology for Animals  |                     |
| 19)        | 9 Nov (Thu)         | Foraging Behaviors   |                     |
| 20)        | 14 Nov (Tue)        | Social Behaviors, Group Selection  |                     |
| 21)        | 16 Nov (Thu)        | Evolution of Sex, Sexual Selection   |                     |
| 22)        | 21 Nov (Tue)        | Population Distribution and Demographic Techniques   |                     |
| 23)        | 23 Nov (Thu)        | Life History   |                     |
| 24)        | 28 Nov (Tue)        | Population Growth and Model  |                     |
| 25)        | 30 Nov (Thu)        | Overview   |                     |